

REMARKS

The Official Action dated June 25, 2003 has been carefully considered. Accordingly, it is believed that the following remarks demonstrate the patentability of claims 1, 5 and 7-28, and place the present application in condition for allowance. Reconsideration is respectfully requested.

Claims 1, 5, 7-14 and 16-28 were rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103 as obvious over the Okuyama et al U.S. Patent No. 5,956,225, with reference to the Setoyama et al publication entitled "Simulation Study on the Relationship Between a High Resolution α_s -Plot and the Pore Size Distribution for Activating Carbon." Claim 15 was rejected under 35 U.S.C. §103(a) as being unpatentable over Okuyama et al and further in view of the Hirahara et al U.S. Patent No. 6,094,338. The Examiner asserted that Okuyama et al disclose activated carbon for use in an electrode of a double layer capacitor and contain pores with a pore diameter of not less than 20 Angstroms and a ratio of pore volume with a diameter of not less than 20 Angstroms (2.0 nm) to a total pore volume of greater than 0.45 and as high as 0.75. The Examiner further asserted that the relationship of pore size to filling swing is known from Setoyama et al which states that pores of width higher than 1.4 nm show no or zero filling swing, while pores of width of 1.2-1.3 show only very slight filling swing. The Examiner therefore concluded that the activated carbon material of Okuyama et al, having a high percentage of pores of zero filling swing has a low rate of filling swing in the claimed range. The Examiner relied on Hirahara et al as teaching the use of a non-aqueous electrolyte.

However, as set forth in detail below, Applicants submit that the activated carbon, activated carbon electrode and electric double layer capacitor defined by claims 1, 5 and 7-28 are not anticipated by Okuyama et al, with reference to Setayama et al, and are nonobvious over and patentably distinguishable from Okuyama et al, with reference to Setayama et al,

alone, or in further combination with Hirahara et al. Accordingly, these rejections are traversed and reconsideration is respectfully requested.

More particularly, claim 1 recites an activated carbon for electric layer capacitor, claim 11 recites an activated carbon electrode formed with an activated carbon, and claim 13 recites an electric double layer capacitor equipped with activated carbon electrodes formed with an activated carbon as polarizable electrodes. According to claims 1, 11 and 13, the activated carbon has a rate of FS (filling swing) in an α_s -plot by nitrogen absorption method of 10 to 25 cm³/g STP, an oxygen content at the surface thereof of at most 5% as determined by X-ray photoelectron spectroscopy, and a specific surface area of 1000-2000 m²/g as determined by nitrogen absorption in accordance with the BET method. The defined activated carbon provides an electric double layer capacitor exhibiting high electrostatic capacity and low resistance. Additionally, the defined activated carbon provides an electric double layer capacitor exhibiting excellent durability in terms of both retention of electrostatic capacity and retention of resistance.

Okuyama et al disclose an activated carbon for an electric double layer capacitor. The activated carbon has a specific surface area of pores with a pore diameter of not less than 2.0 nm (20 Angstroms). Okuyama et al further disclose that the ratio of the specific surface area of the pores with a pore diameter of not less than 2.0 nm to the specific surface area of the whole pores is not less than 0.45 (column 3, lines 29-36). On the other hand, Setoyama et al disclose that activated carbon having a pore size of 1.4 nm or greater exhibits zero filling swing and that activated carbon have a pore size of 1.2 or 1.3 nm has only a very slight filling swing.

Applicants find no teaching by Okuyama et al relating to the pore size exhibited by the activated carbon disclosed therein, other than the requirement that the ratio of specific surface of the pores with a pore diameter greater than 2.0 nm to the specific surface area of

all the pores is at least 0.45. Particularly, Okuyama et al provide no teaching as to the specific pore size of any pores which are less than 2.0 nm. Particularly, Okuyama et al provide no teaching or suggestion as to the amount, if any, of pores having a pore size less than 1.4 nm. In the absence of any such teaching or suggestion, there is no basis for assuming that the Okuyama et al pores inherently exhibit a filling swing greater than zero or inherently exhibit a filling swing of 10 to 25 cm³/g STP as presently claimed. The Examiner's conclusion that it can be expected that the activated carbon of Okuyama et al has a low rate of filling swing as presently claimed is simply not supported by the evidence of record as Okuyama et al provide no teaching or suggestion relating to the size of any pores which are less than 2.0 nm in width.

Anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference, *In re Robertson*, 49 U.S.P.Q.2d 1949, 1950 (Fed Cir. 1999). In view of the failure of Okuyama et al to expressly or inherently teach an activated carbon having a rate of FS of 10 to 25 cm³/g STP, particularly in combination with an oxygen content of at most 5% and a specific surface area of 1000 to 2000 m²/g, as defined in claims 1, 11 and 13, Okuyama et al do not set forth each and every element of the present claims, and therefore do not anticipate the present claims under 35 U.S.C. §102. It is therefore submitted that the rejection of claims 1, 11 and 13, and claims 5, 7-10, 12, 14 and 16-28 dependent thereon, under 35 U.S.C. §102 has been overcome. Reconsideration is respectfully requested.

Moreover, in order to render a claimed invention obvious, the prior art must enable one skilled in the art to make and use the claimed invention, *Motorola, Inc. v. Interdigital Tech. Corp.*, 43 U.S.P.Q.2d 1481, 1489 (Fed. Cir. 1997). Not only do Okuyama et al fail to teach or suggest an activated carbon, an activated carbon electrode formed with activated carbon, or an electric double-layer capacitor equipped with activated carbon electrodes,

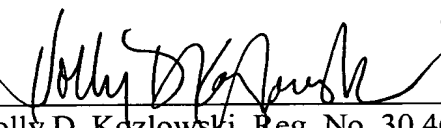
wherein the activated carbon has a filling swing of 10 to 25 cm³/g STP, particularly in combination with an oxygen content and specific surface area as required by the present claims, Okuyama et al provide no teaching, suggestion or incentive to provide an activated carbon with a filling swing as claimed, or with a pore size which would result in a filling swing as presently claimed. Thus, Okuyama et al do not enable one of ordinary skill in the art to make and use the presently claimed activated carbon, electrode or capacitor. To the contrary, the only pore size limitation taught as important by Okuyama et al, namely pores with a pore diameter of not less than 2.0 nm, resulting in a filling swing of zero, teaches away from the presently claimed activated carbon. It is error to find obviousness where references diverge from and teach away from the invention at hand, *In re Fine*, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988).

Finally, the deficiencies of Okuyama et al are not resolved by Hirahara et al. Hirahara et al disclose an electric double-layer capacitor comprising a non-aqueous electrolyte and polarized electrodes as positive and negative electrodes. Hirahara et al further disclose that by using polarized electrodes having a rest potential capable of raising the charging potential on a high-potential side to as high a value as substantially equal to the decomposition initiation voltage of the electrolyte, it becomes possible to increase the potential difference upon charging and discharging (column 4, lines 34-40). However, Applicants find no teaching or suggestion by Hirahara et al relating to activated carbon as defined in claim 13, from which claim 15 depends. Particularly, Applicants find no teaching or suggestion by Hirahara et al relating to an electric double layer capacitor equipped with activated carbon electrodes formed with an activated carbon as polarizable electrodes wherein the activated carbon has a filling swing of 10 to 25 cm³/g STP, particularly in combination with an oxygen content at the surface thereof of at most 5% and a specific surface area of 1000 to 2000 m²/g. Thus, Hirahara et al do not resolve the deficiencies of Okuyama et al.

It is therefore submitted that the activated carbon, activated carbon electrode and electric double-layer capacitor defined by claims 1, 5 and 7-28 are neither anticipated by nor rendered obvious over Okuyama et al, alone or in combination with Hirahara et al. Accordingly, the rejections under 35 U.S.C. §§ 102 and/or 103 have been overcome. Reconsideration is respectfully requested.

It is believed that the above represents a complete response to the rejections under 35 U.S.C. §§ 102 and 103, and places the present application in condition for allowance. Reconsideration and an early allowance are requested.

Respectfully submitted,

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